THAT WHICH IS CLAIMED IS:

1. An electronic torque control and distribution system (11) for hybrid propulsion vehicles wherein the drive thrust is distributed between an electric engine (3) and an internal combustion engine (1) through a transmission system (2) delivering the torque of both engines (1, 3) to the vehicle wheels, being slaved to a control unit (4), characterized in that it comprises:

- a controller (12) incorporating a fuzzy logic processor (13) to predict through Soft Computing techniques the torque contributions of the electric engine (3) and of the thermal engine (1);
- a virtual sensor (15) for estimating the vehicle polluting emissions;
- said controller (12) and said sensor (15) being connected to said control unit (4).

2. A system according to claim 1, characterized in that said controller (12) and said control unit (4) receive as input a predetermined number of operation parameters of the vehicle (10) and of the engines (1, 3) and in that it comprises respective control outputs for actuator elements of said vehicle, like the clutch or said transmission system (2), and for said engines (1, 3) supply; the controller (12) having at the output further electric signals of torque request applied to the control unit (4).

3. A system according to claim 2,

characterized in that said controller (12) receives the following inputs:

- Path altimetric profile (road noise);
- Driving commands (pedals);
- System component status (system status);
- Fuel mass capacity (**ICE** fuel amount);
- Electric drive phase currents (**ED** currents);
- Battery-supplied current (**ESS** currents);
- Transmission system status (Transmission position).

4. A system according to claim 1, characterized in that the internal combustion engine (1) operates at steady state and the possible supplementary torque needed is drawn from the electric engine (3).

5. A system according to claim 1, characterized in that said controller (12) comprises a fuzzy-type processor (13) receiving as inputs at least a state-of-charge *(soc)* signal of the batteries (6) supplying the electric engine (3) and a signal *(cycle)*, indicating a path calculated according to the average and the variance of the vehicle speed.

6. A system according to claim 5, characterized in that said path signal *(cycle)* is recalculated at predetermined time intervals (Δt).

7. A system according to claim 2, characterized in that said control unit (4) receives

the following inputs:

- Electric drive phase currents (**ED** currents);
- Electric machine angular speed (**ED** speed);
- Thermal machine angular speed (**ICE** speed);
- Thermal engine timing (**ICE** phase);
- Out-vehicle conditions (atmospheric pressure and temperature);
- The torque requests outputted by the controller (12).

8. A system according to claim 5, characterized in that said processor (13) operates on membership functions according to the following fuzzy interference rules:

A) if (*cycle* is **off**) and (*soc* is not **soc_low**) then (*Tice* is **0**) (*time* is **0**)

B) if (*cycle* is **urban**) and (*soc* is not **soc_low**) then (*Tice* is **0**) (*time* is **1**)

C) if (*cycle* is **comb**) and (*soc* is not **soc_low**) then (*Tice* is **50**) (*time* is **1**)

D) if (*cycle* is **extra**) and (*soc* is not **soc_low**) then (*Tice* is **50**) (*time* is **1**)

E) if (*soc* is **soc_low**) then (*Tice* is **100**) (*time* is **0**)

9. A system according to claim 1, characterized in that said control unit (4) has a signal output defining the fuel mass capacity (**ICE** fuel amount) required to the internal combustion engine (3)

power supply by means of said virtual sensor (15).

10. A system according to claim 1, characterized in that the prediction is performed by monitoring both the present vehicle state and the past history related to the driving conditions according to several operation data comprised in a controller memory.